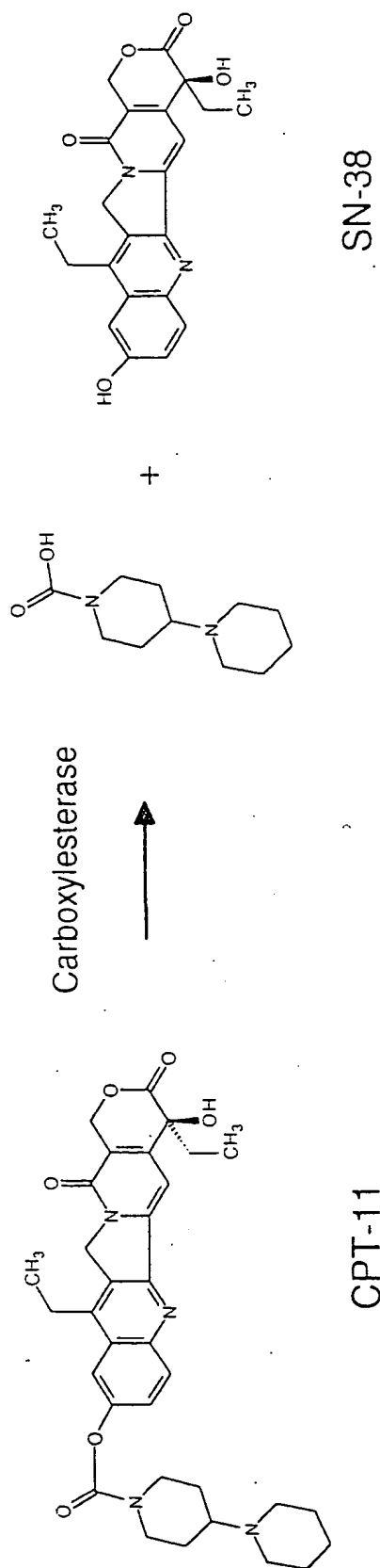
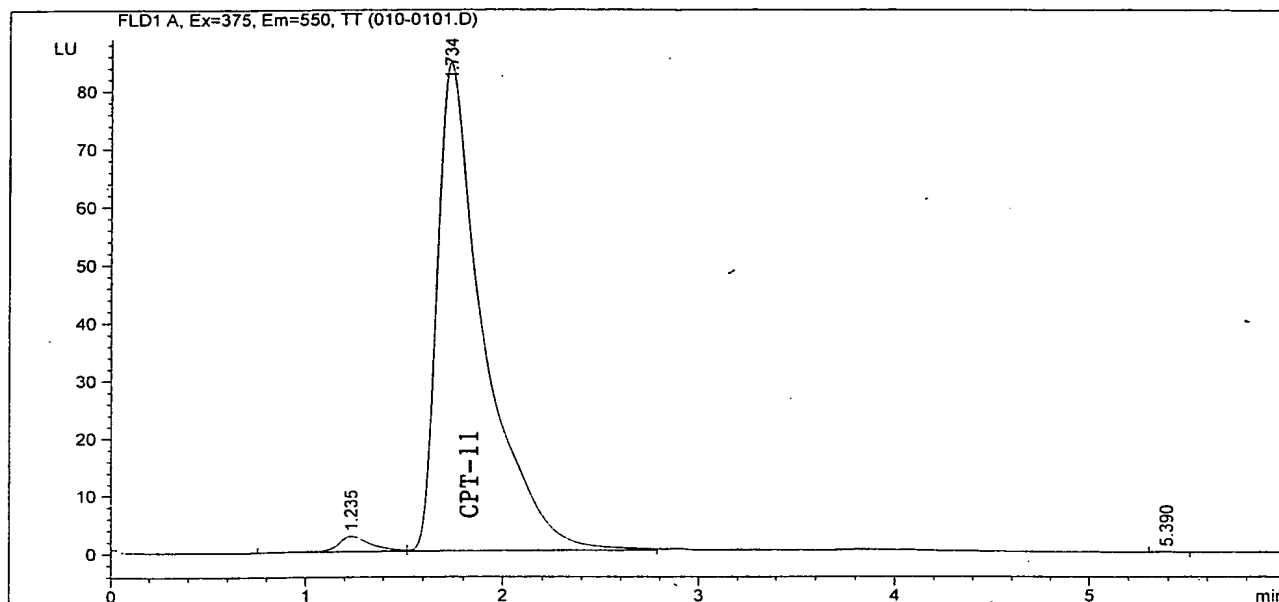


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FIGURE 2



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=====  
 Area Percent Report  
 =====

Sorted By : Signal  
 Multiplier : 1.0000  
 Dilution : 1.0000

Signal 1: FLD1 A, Ex=375, Em=550, TT

Peak #	RetTime [min]	Type	Width [min]	Area LU	Height [LU]	Area %
1	1.235	BV	0.1798	33.54967	2.69549	2.4019
2	1.734	VB	0.2291	1362.90149	84.52777	97.5726
3	5.390	PP	0.0644	3.55984e-1	8.81600e-2	0.0255

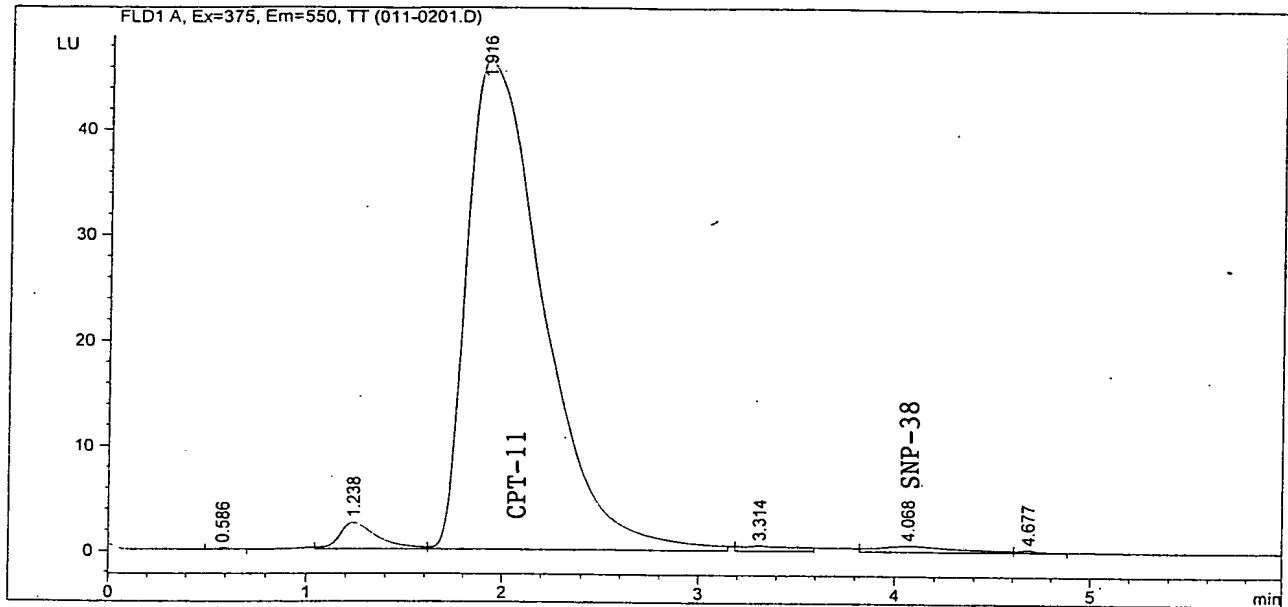
Totals : 1396.80714 87.31142

Results obtained with enhanced integrator!

=====  
 \*\*\* End of Report \*\*\*

FIGURE 3

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=====  
Area Percent Report  
=====

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

Signal 1: FLD1 A, Ex=375, Em=550, TT

Peak #	RetTime [min]	Type	Width [min]	Area LU	Height [LU]	Area %
1	0.586	PP	0.0648	6.38727e-1	1.56677e-1	0.0482
2	1.238	BV	0.2010	33.95303	2.51082	2.5614
3	1.916	VB	0.4205	1261.66895	46.46422	95.1804
4	3.314	BB	0.2377	10.32978	5.46781e-1	0.7793
5	4.068	BV	0.4015	16.96264	5.87734e-1	1.2797
6	4.677	VB	0.1161	2.00295	2.41638e-1	0.1511

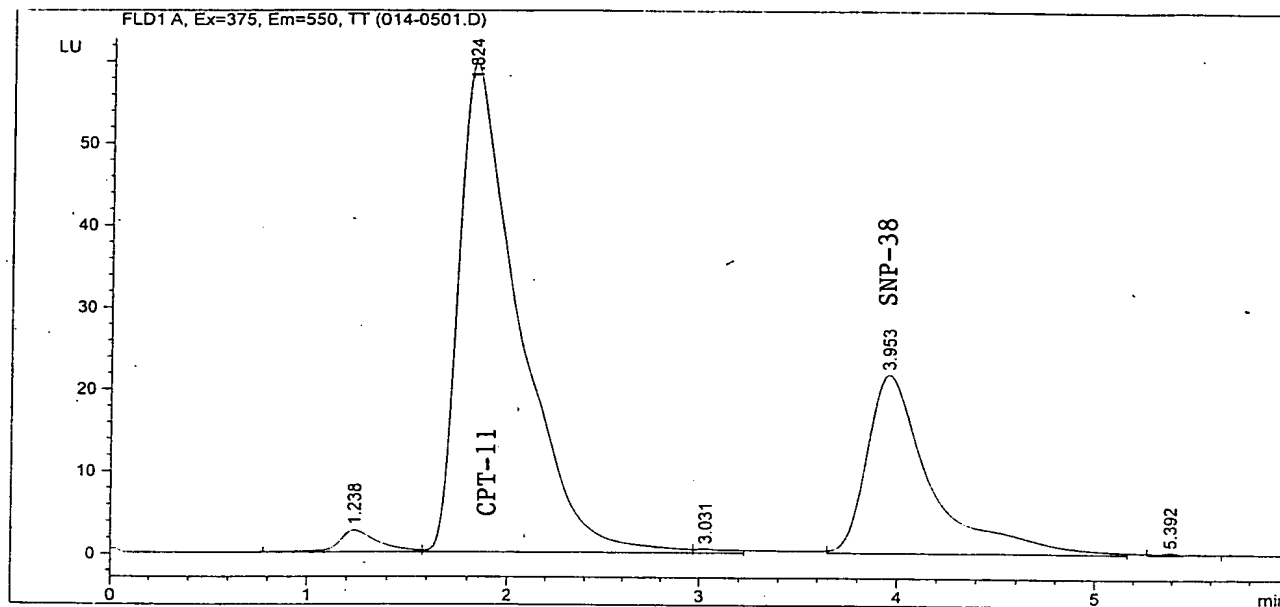
Totals : 1325.55607 50.50786

Results obtained with enhanced integrator!

=====  
\*\*\* End of Report \*\*\*

FIGURE 4

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=====  
Area Percent Report  
=====

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

Signal 1: FLD1 A, Ex=375, Em=550, TT

Peak #	RetTime [min]	Type	Width [min]	Area LU	Height [LU]	Area %
1	1.238	BV	0.2036	37.44498	2.65213	2.0899
2	1.824	VV	0.2933	1256.83813	59.65673	70.1479
3	3.031	VB	0.1566	6.12651	5.05245e-1	0.3419
4	3.953	BB	0.3270	488.97583	21.75457	27.2912
5	5.392	BB	0.1365	2.31119	2.26240e-1	0.1290

Totals : 1791.69665 84.79490

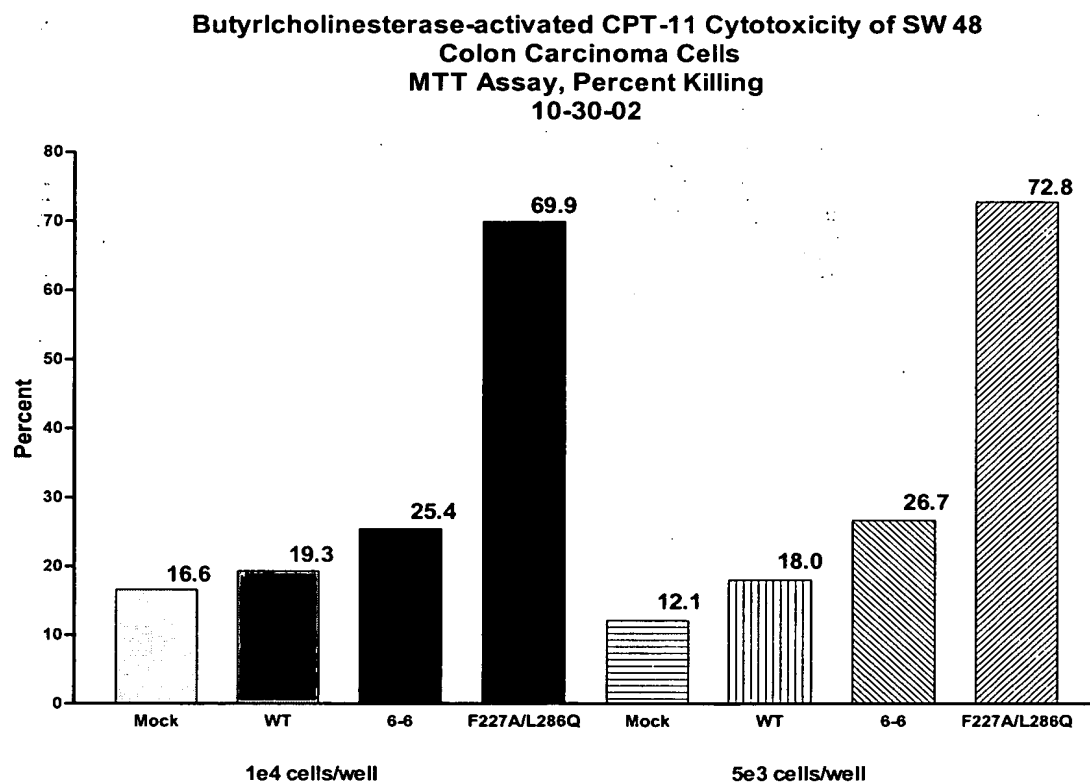
Results obtained with enhanced integrator!

=====  
\*\*\* End of Report \*\*\*

FIGURE 5

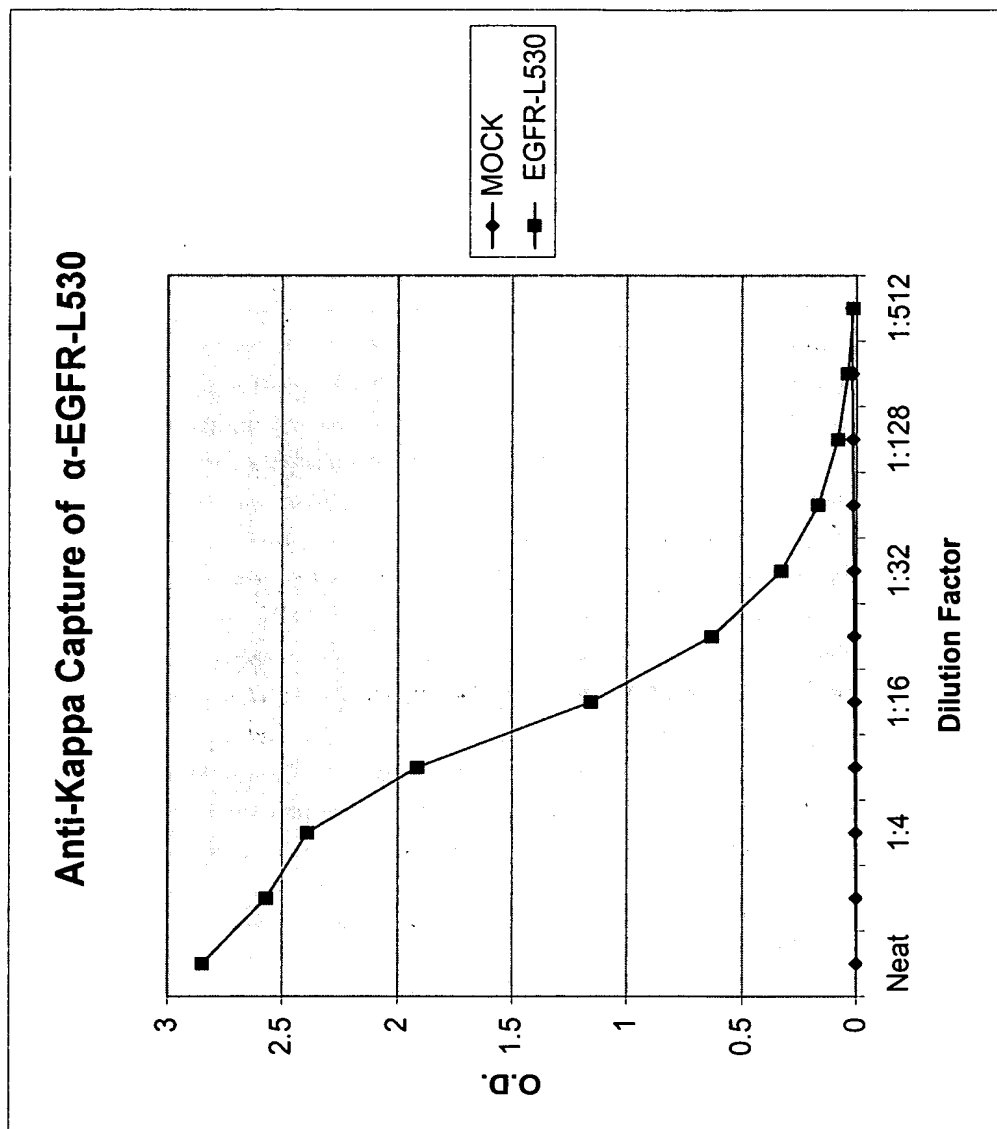
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Figure 6



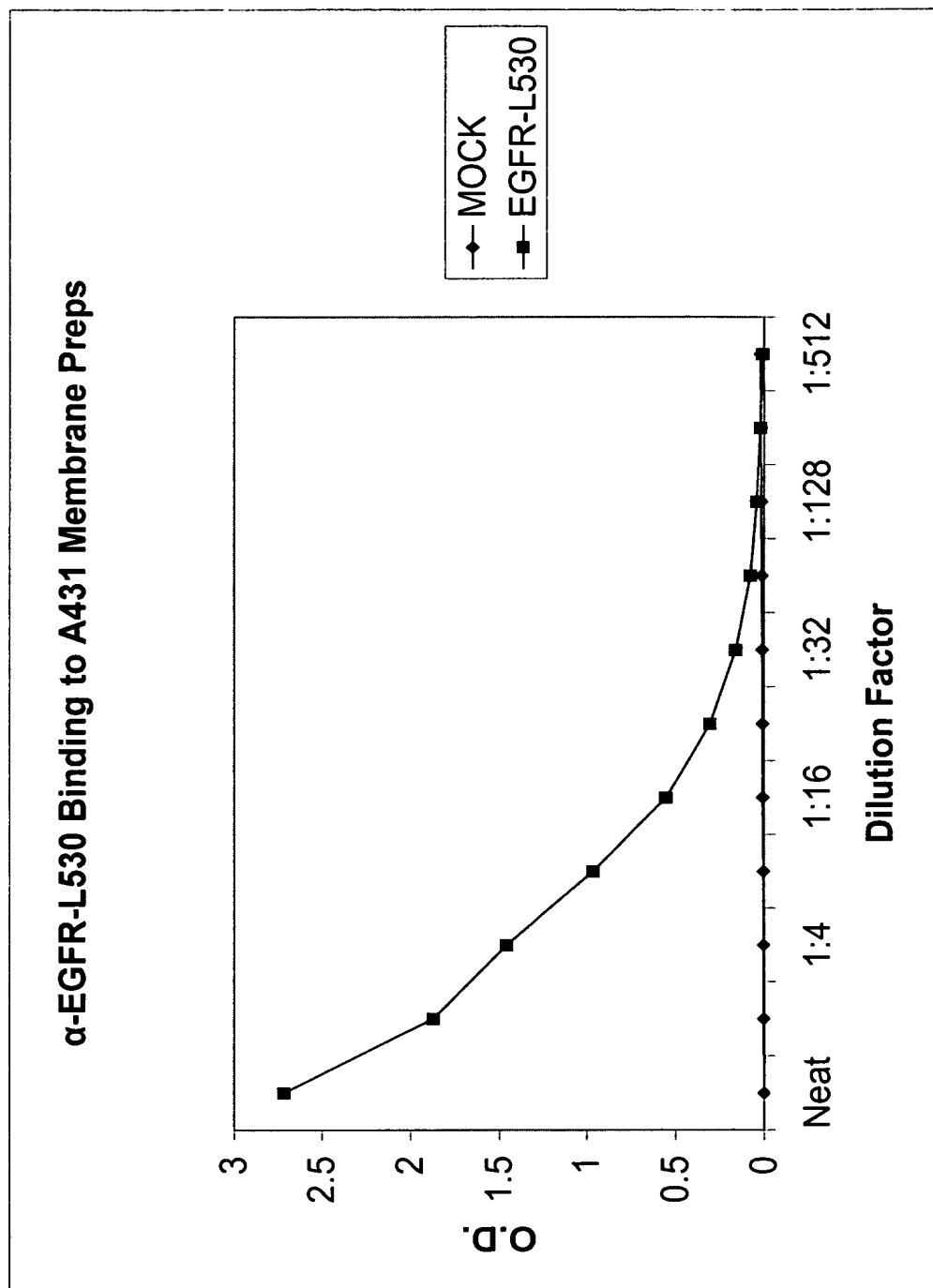
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**Figure 7**  
**Anti-Kappa Capture of  $\alpha$ -EGFR-L530**



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Figure 8





## Figure 9

Mouse- $\alpha$ EGF VL construct

	SEQ ID NO: 18	M D M R V P A Q L L G L L L L L L
1	SEQ ID NO: 17	ATG GAC ATG AGG GTC CCC GCT CAG CTC CTG GGG CTC CTG CTG CTC CTC
	W L	P G A K C D I L L T Q S P V I
52	TGG CTC CCA GGT GCC AAA TGT GAC ATC TTG CTG ACT CAG TCT CCA GTC ATC	
	L S	V S S P G E R V S F S C R A S Q
103	CTG TCT GTG AGT CCA GGA GAA AGA GTC AGT TTC TCC TGC AGG GCC AGT CAG	
	S I	G T N I H W Y Q Q R T N G S P
154	AGT ATT GGC ACA AAC ATA CAC TGG TAT CAG CAA AGA ACA AAT GGT TCT CCA	
	R L	L I K Y A S E S I S G I P S R
205	AGG CTT CTC ATA AAG TAT GCT TCT GAG TCT ATC TCT GGG ATC CCT TCC AGG	
	F S	G S G S G T D F T L S I N S V
2256	TTT AGT GGC AGT GGA TCA GGG ACA GAT TTT ACT CTT AGC ATC AAC AGT GTG	
	E S	E D I A D Y Y C Q Q N N N W P
307	GAG TCT GAA GAT ATT GCA GAT TAT TAC TGT CAA CAA AAT AAT AAC TGG CCA	
	T T	F G A G T K L E L K R T V A A
358	ACC ACG TTC GGT GCT GGG ACC AAG CTG GAG CTG AAA CGA ACT GTG GCT GCA	
	P S	V F I F P P S D E Q L K S G T
409	CCA TCT GTC TTC ATC TTC CCG CCA TCT GAT GAG CAG TTG AAA TCT GGA ACT	
	A S	V V C L L N N F Y P R E A K V
460	GCC TCT GTT GTG TGC CTG CTG AAT AAC TTC TAT CCC AGA GAG GCC AAA GTA	
	Q W	K V D N A L Q S G N S Q E S V
511	CAG TGG AAG GTG GAT AAC GCC CTC CAA TCG GGT AAC TCC CAG GAG AGT GTC	
	T E	Q D S K D S T Y S L S S T L T
562	ACA GAG CAG GAC AGC AAG GAC AGC ACC TAC AGC CTC AGC AGC ACC CTG AC	
	L S	K A D Y E K H K V Y A C E V T

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Figure 9 (continued)

613	CTG AGC AAA GCA GAC TAC GAG AAA CAC AAA GTC TAC GCC TGC GAA GTC ACC
	H Q G L S S P V T K S F N R G E C
664	CAT CAG GGC CTG AGC TCG CCC GTC ACA AAG AGC TTC AAC AGG GGA GAG TGT
	* TAG
715	

### Figure 10

1	SEQ ID NO: 19	ATG	GGA	TGG	AGC	TGT	ATC	ATC	CTC	L	F	L	V	A	T	A	T
	G	V	H	S	Q	V	Q	L	K	Q	S	G	P	G	L	V	Q
52	GGT	GTC	CAC	TCC	CAG	GTG	CAG	CTG	AAG	CAG	TCA	GGA	CCT	GGC	CTA	GTG	CAG
	P	S	Q	S	L	S	I	T	C	T	V	S	G	F	S	L	T
103	CCC	TCA	CAG	AGC	CTG	TCC	ATC	ACC	TGC	ACA	GTC	TCT	GGT	TTC	TCA	TTA	ACT
	N	Y	G	V	H	W	V	R	Q	S	P	G	K	G	L	E	W
154	AAC	TAT	GGT	GTA	CAC	TGG	GTT	CGC	CAG	TCT	CCA	GGA	AAG	GGT	CTG	GAG	TGG
	L	G	V	I	W	S	G	G	N	T	D	Y	N	T	P	F	T
205	CTG	GGA	GTG	ATA	TGG	AGT	GGT	GGA	AAC	ACA	GAC	TAT	AAT	ACA	CCT	TTC	ACA
	S	R	L	S	I	N	K	D	N	S	K	S	Q	V	F	F	K
2256	TCC	AGA	CTG	AGC	ATC	AAC	AAG	GAC	AAT	TCC	AAG	AGC	CAA	GTT	TTC	TTT	AAA
	M	N	S	L	Q	S	N	D	T	A	I	Y	Y	C	A	R	A
307	ATG	AAC	AGT	CTG	CAA	TCT	AAT	GAC	ACA	GCC	ATA	TAT	TAC	TGT	GCC	AGA	GCC
	L	T	Y	Y	D	Y	E	F	A	Y	W	G	Q	G	T	L	V
358	CTC	ACC	TAC	TAT	GAT	TAC	GAG	TTT	GCT	TAC	TGG	GGC	CAA	GGG	ACT	CTG	GTC
	T	V	S	A	A	S	T	K	G	P	S	V	F	P	L	A	P
409	ACT	GTC	TCT	GCA	GCC	TCC	ACC	AAG	GGC	CCA	TCG	GTC	TTC	CCC	CTG	GCA	CCC
	S	S	K	S	T	S	G	G	T	A	A	L	G	C	L	V	K
460	TCC	TCC	AAG	AGC	ACC	TCT	GGG	GGC	ACA	GCG	GCC	CTG	GGC	TGC	CTG	GTC	AAG
	D	Y	F	P	E	P	V	T	V	S	W	N	S	G	A	L	T
511	GAC	TAC	TTC	CCC	GAA	CCG	GTG	ACG	GTG	TCG	TGG	AAC	TCA	GGC	GCC	CTG	ACC
	S	G	V	H	T	F	P	A	V	L	Q	S	S	G	L	Y	S
562	AGC	GGC	GTG	CAC	ACC	TTC	CCG	GCT	GTC	CTA	CAG	TCC	TCA	GGA	CTC	TAC	TCC
	L	S	S	V	V	T	V	P	S	S	S	L	G	T	Q	T	Y

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Figure 10 (continued)

613	CTC AGC AGC GTG GTG ACC GTG CCC TCC AGC AGC TTG GGC ACC CAG ACC TAC	
	I C N V N H K P S N T K V D K K A	
664	ATC TGC AAC GTG AAT CAC AAG CCC AGC AAC ACC AAG GTG GAC AAG AAA GCA	
	E P K S C D K T H T C P P C P K L	
715	GAG CCC AAA TCT TGT GAC AAA ACT CAC ACA TGT CCA CCG TGT CCA AAG CTT	
	E D D I I I A T K N G K V R G M N	
766	GAA GAT GAC ATC ATA ATT GCA ACA AAG AAT GGA AAA GTC AGA GGG ATG AAC	
	L T V F G G T V T A F L G I P Y A	
817	TTG ACA GTT TTT GGT GGC ACG GTA ACA GCC TTT CTT GGA ATT CCC TAT GCA	
	Q P P L G R L R F K K P Q S L T K	
868	CAG CCA CCT CTT GGT AGA CTT CGA TTC AAA AAG CCA CAG TCT CTG ACC AAG	
	W S D I W N A T K Y A N S C C Q N	
919	TGG TCT GAT ATT TGG AAT GCC ACA AAA TAT GCA AAT TCT TGC TGT CAG AAC	
	I D Q S F P G F H G S E M W N P N	
970	ATA GAT CAA AGT TTT CCA GGC TTC CAT GGA TCA GAG ATG TGG AAC CCA AAC	
	T D L S E D C L Y L N V W I P A P	
1021	ACT GAC CTC AGT GAA GAC TGT TTA TAT CTA AAT GTA TGG ATT CCA GCA CCT	
	K P K N A T V L I W I Y G G F Q	
1072	AAA CCA AAA AAT GCC ACT GTA TTG ATA TGG ATT TAT GGT GGT TTT CAA	
	T G T S S L H V Y D G K F L A R V	
1123	ACT GGA ACA TCA TCT TTA CAT GTT TAT GAT GGC AAG TTT CTG GCT CGG GTT	
	E R V I V V S M N Y R V G A L G F	
1174	GAA AGA GTT ATT GTA GTG TCA ATG AAC TAT AGG GTG GGT GCC CTA GGA TTC	
	L A L P G N P E A P G N M G L F D	
1225	TTA GCT TTG CCA GGA AAT CCT GAG GCT CCA GGG AAC ATG GGT TTA TTT GAT	
	Q Q L A L Q W V Q K N I A A F G G	
1276	CAA CAG TTG GCT CTT CAG TGG GTT CAA AAA AAT ATA GCA GCC TTT GGT GGA	
	N P K S V T L F G E S A A G A A S V	

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Figure 10 (continued)

1327	AAT CCT AAA AGT GTA ACT CTC TTT GGA GAA AGT GCA GGA GCA GCT TCA GTT
1378	S L H L L S P G S H S L F T R A I
1429	AGC CTG CAT TTG CTT TCT CCT GGA AGC CAT TCA TTG TTC ACC AGA GCC ATT
	L Q S G S F N A P W A V T S L Y E
1480	CTG CAA AGT GGT TCC TTT AAT GCT CCT TGG GCG GTA ACA TCT CTT TAT GAA
	A R N R T L N L A K L T G C S R E
1531	GCT AGG AAC AGA ACG TTG AAC TTA GCT AAA TTG ACT GGT TGC TCT AGA GAG
	N E T E I I K C L R N K D P Q E I
1582	AAT GAG ACT GAA ATA ATC AAG TGT CTT AGA AAT AAA GAT CCC CAA GAA ATT
	L L N E A F V V V G T P L S V N
1633	CTT CTG AAT GAA GCA TTT GTT GTC CCC TAT GGG ACT CCT TTG TCA GTA AAC
	F G P T V D G D F L T D M P D I L
1684	TTT GGT CCG ACC GTG GAT GGT GAT TTT CTC ACT GAC ATG CCA GAC ATA TTA
	L E L G Q F K K T Q I L V G V N K
1735	CTT GAA CTT GGA CAA TTT AAA AAA ACC CAG ATT TTG GTG GGT GTT AAT AAA
	D E G T A F L V V Y G A P G F S K D
1786	GAT GAA GGG ACA GCT TTT TTA GTC TAT GGT GCT CCT GGC TTC AGC AAA GAT
	N N S I I T R K E F Q E G L K I F
1837	AAC AAT AGT ATC ATA ACT AGA AAA GAA TTT CAG GAA GGT TTA AAA ATA TTT
	F P G V S E F G K E S I L F H Y T
1888	TTT CCA GGA GTG AGT GAG TTT GGA AAG GAA TCC ATC CTT TTT CAT TAC ACA
	D W V D D Q R P E N Y R E A L G D
1939	GAC TGG GTA GAT GAT CAG AGA CCT GAA AAC TAC CGT GAG GCC TTG GGT GAT
	V V G D Y N F I C P A L E F T K K
1990	GTT GTT GGG GAT TAT AAT TTC ATA TGC CCT GCC TTG GAG TTC ACC AAG AAG
	F S E W G N N A F F Y Y F E H R S
	TTC TCA GAA TGG GGA AAT AAT GCC TTT TTC TAC TAT TTT GAA CAC CGA TCC
	S K L P P W P E M G V M H G Y E I

Figure 10 (continued)

2041	TCC AAA CTT CCG TGG CCA GAA TGG ATG GGA GTG ATG CAT GGC TAT GAA ATT
	E F V G L P L E R R D N Y T K A
2092	GAA TTT GTC TTT GGT TTA CCT CTG GAA AGA AGA GAT AAT TAC ACA AAA GCC
	E I L S R S I V K R W A N F A K
2143	GAG GAA ATT TTG AGT AGA TCC ATA GTG AAA CGG TGG GCA AAT TTT GCA AAA
	Y G N P N E T Q N N S T S W P V F
2194	TAT GGG AAT CCA AAT GAG ACT CAG AAC AAT AGC ACA AGC TGG CCT GTC TTC
	K S T E Q K Y L T L N T E S T R I
2245	AAA AGC ACT GAA CAA AAA TAT CTA ACC TTG AAT ACA GAG TCA ACA AGA ATA
	M T K L R A Q Q C R F W T S F P
2296	ATG ACG AAA CTA CGT GCT CAA CAA TGT CGA TTC TGG ACA TCA TTT TTT CCA
	K V *
2347	AAA GTC TGA

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Figure 11

```

1  GAA GAT GAC ATC ATA ATT GCA ACA AAG AAT GGA AAA GTC AGA GGG ATG AAC
   L T V F G G T G G G A C A T V T A F L L G G I P Y A
52  TTG ACA GTT TTT GGT GGC ACG GTA ACA GCC TTT CTT GGA ATT CCC TAT GCA
   Q P P L G R L R F K K P Q S L T K
103 CAG CCA CCT CTT GGT AGA CTT CGA TTC AAA AAG CCA CAG TCT CTG ACC AAG
   W S D I W N A T K Y A N S C C Q N
154 TGG TCT GAT ATT TGG AAT GCC ACA AAA TAT GCA AAT TCT TGC TGT CAG AAC
   I D Q S F P G F H G S E M W N P N
205 ATA GAT CAA AGT TTT CCA GGC TTC CAT GGA TCA GAG ATG TGG AAC CCA AAC
   T D L S E D C L Y L N V W I P A P
256 ACT GAC CTC AGT GAA GAC TGT TTA TAT CTA AAT GTA TGG ATT CCA GCA CCT
   K P K N A T V L I W I Y G G G F Q
307 AAA CCA AAA AAT GCC ACT GTA TTG ATA TGG ATT TAT GGT GGT TTT CAA
   T G T S S L H V Y D G K F L A R V
358 ACT GGA ACA TCA TCT TTA CAT GTT TAT GAT GGC AAG TTT CTG GCT CGG GTT
   E R V I V S M N Y R V G A L G F
409 GAA AGA GTT ATT GTA GTG TCA ATG AAC TAT AGG GTG GGT GCC CTA GGA TTC
   L A L P G N P E A P G N M G L F D
460 TTA GCT TTG CCA GGA AAT CCT GAG GCT CCA GGG AAC ATG GGT TTA TTT GAT
   Q Q L A L Q W V Q K N I A A F G G
511 CAA CAG TTG GCT CTT CAG TGG GTT CAA AAA AAT ATA GCA GCC TTT GGT GGA
   N P K S V T L F G E S A G A S V
562 AAT CCT AAA AGT GTA ACT CTC TTT GGA GAA AGT GCA GGA GCA GCT TCA GTT
   S L H L L S P G S H S L F T R A I
613 AGC CTG CAT TTG CTT TCT CCT GGA AGC CAT TCA TTG TTC ACC AGA GCC ATT
   L Q S G S F W A P W A V T S L Y E
    
```

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Figure 11 (continued)

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664 CTG CAA AGT GGT TCC TTT AAT GCT CCT TGG GCG GTA ACA TCT CTT TAT GAA
    A R N R T L N L A K L T G C S R E
715 GCT AGG AAC AGA ACG TTG AAC TTA GCT AAA TTG ACT GGT TGC TCT AGA GAG
    N E T E I I K C L R N K D P Q E I
766 AAT GAG ACT GAA ATA ATC AAG TGT CTT AGA AAT AAA GAT CCC CAA GAA ATT
    L L N E A F V V G T P Y G T P L S V N
817 CTT CTG AAT GAA GCA TTT GTT GTC CCC TAT GGG ACT CCT TTG TCA GTA AAC
    F G P T V D G D F L T D M P D I L
868 TTT GGT CCG ACC GTG GAT GGT GAT TTT CTC ACT GAC ATG CCA GAC ATA TTA
    L E L G Q F K K T Q I L V G V N K
919 CTT GAA CTT GGA CAA TTT AAA ACC CAG ATT TTG GTG GGT GTT AAT AAA
    D E G T A F L V Y G A P G F S K D
970 GAT GAA GGG ACA GCT TTT TTA GTC TAT GGT GCT CCT GGC TTC AGC AAA GAT
    N N S I I T R K E F Q E G L K I F
1021 AAC AAT AGT ATC ATA ACT AGA AAA GAA TTT CAG GAA GGT TTA AAA ATA TTT
    F P G V S E F G K E S I L F H Y T
1072 TTT CCA GGA GTG AGT GAG TTT GGA AAG GAA TCC ATC CTT TTT CAT TAC ACA
    D W V D D Q R P E N Y R E A L G D
1123 GAC TGG GTA GAT GAT CAG AGA CCT GAA AAC TAC CGT GAG GCC TTG GGT GAT
    V V G D Y N F I C P A L E F T K K
1174 GTT GTT GGG GAT TAT AAT TTC ATA TGC CCT GCC TTG GAG TTC ACC AAG AAG
    F S E W G N N A F F Y Y F E H R S
1225 TTC TCA GAA TGG GGA AAT AAT GCC TTT TTC TAC TAT TTT GAA CAC CGA TCC
    S K L P W P E W M G V M H G Y E I
1276 TCC AAA CTT CCG TGG TGG CCA GAA TGG ATG GGA GTG ATG CAT GGC TAT GAA ATT
    E F V F G L P L E R R D N Y T K A
1327 GAA TTT GTC TTT GGT TTA CCT CTG GAA AGA AGA GAT AAT TAC ACA AAA GCC
    E E I L S R S I V K R R W A N F A K
    
```



1378	GAG	GAA	ATT	TTG	AGT	AGA	TCC	ATA	GTG	AAA	CGG	TGG	GCA	AAT	TTT	GCA	AAA
	Y	G	N	P	N	E	T	Q	N	N	S	T	S	W	P	V	F
1429	TAT	GGG	AAT	CCA	AAT	GAG	ACT	CAG	AAC	AAT	AGC	ACA	AGC	TGG	CCT	GTC	TTC
	K	S	T	E	Q	K	Y	L	T	L	N	T	E	S	T	R	I
1480	AAA	AGC	ACT	GAA	CAA	AAA	TAT	CTA	ACC	TTG	AAT	ACA	GAG	TCA	ACA	AGA	ATA
	M	T	K	L	R	A	Q	Q	C	R	F	W	T	S	F	F	P
1531	ATG	ACG	AAA	CTA	CGT	GCT	CAA	CAA	TGT	CGA	TTC	TGG	ACA	TCA	TTT	TTT	CCA
	K	V	L	E	M	T	G	N	I	D	E	A	E	W	E	W	K
1582	AAA	GTC	TTG	GAA	ATG	ACA	GGA	AAT	ATT	GAT	GAA	GCA	GAA	TGG	GAG	TGG	AAA
	A	G	F	H	R	W	N	N	Y	M	M	D	W	K	N	Q	F
1633	GCA	GGA	TTC	CAT	CGC	TGG	AAC	AAT	TAC	ATG	ATG	GAC	TGG	AAA	AAT	CAA	TTT
	N	D	Y	T	S	K	K	E	S	C	V	G	L	SEQ	ID	NO:	22
1684	AAC	GAT	TAC	ACT	AGC	AAG	AAA	GAA	AGT	TGT	GTG	GGT	CTC	SEQ	ID	NO:	21

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**Figure 12**

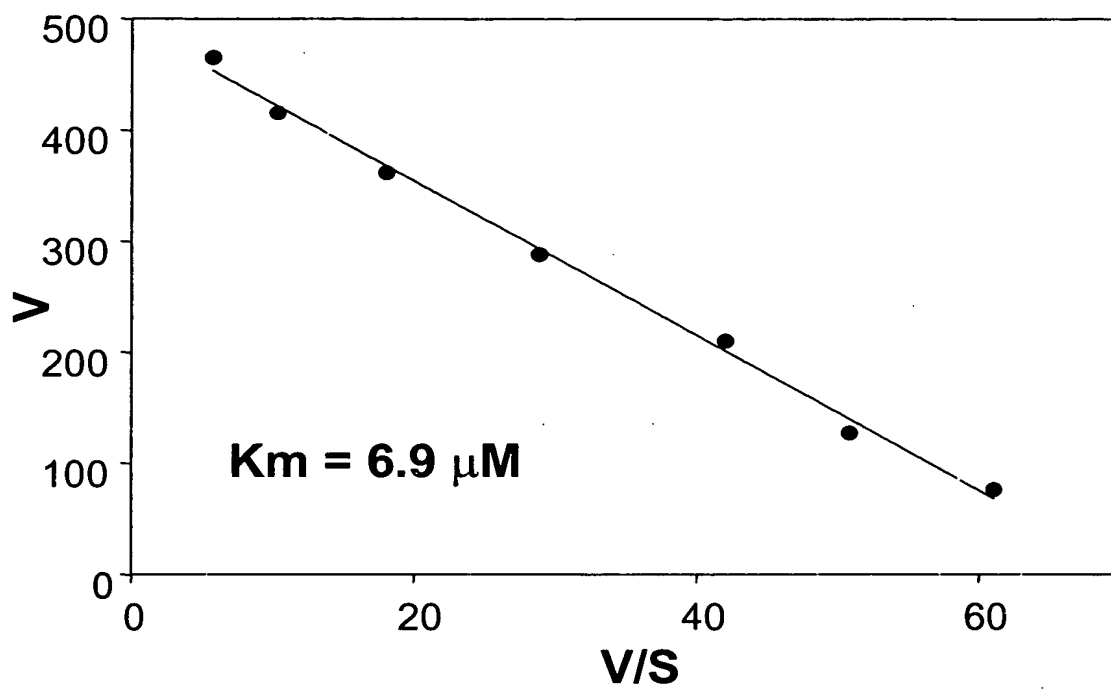
CPT-11, $\mu\text{M}$	BChE	SN38 (AUC)	SN38 / $\mu\text{g}$ BChE
2	WT	34	1.7
2	4-1	277	5,540

20	WT	269	13.5
20	4-1	927	18,540

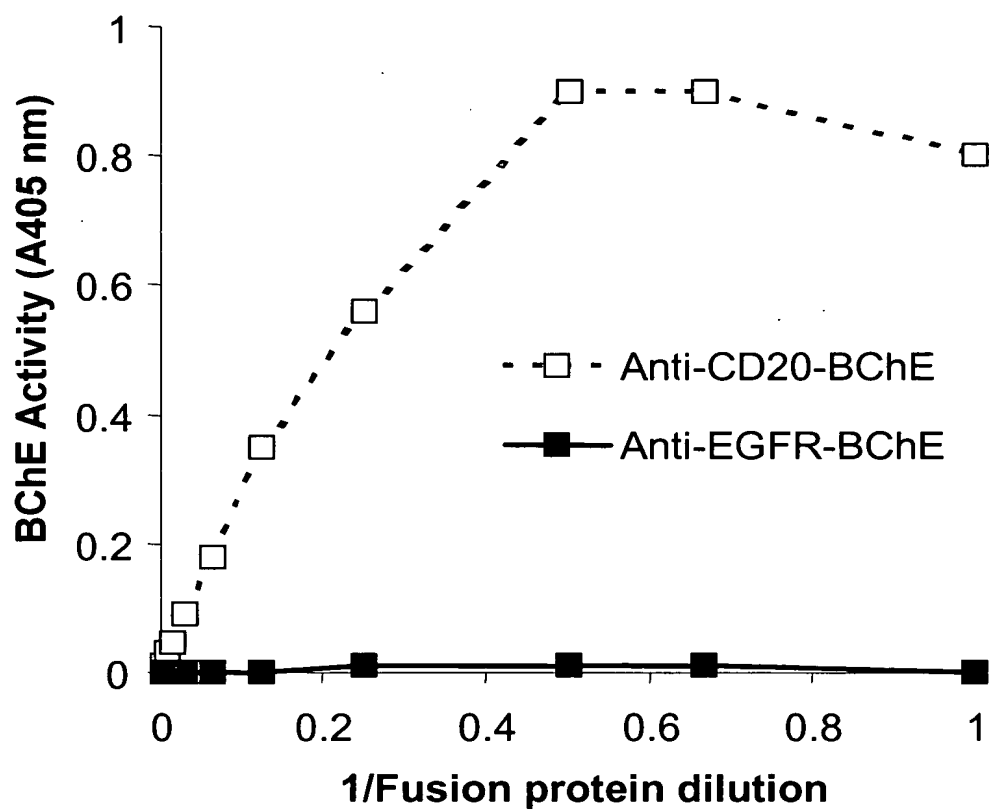
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Figure 13



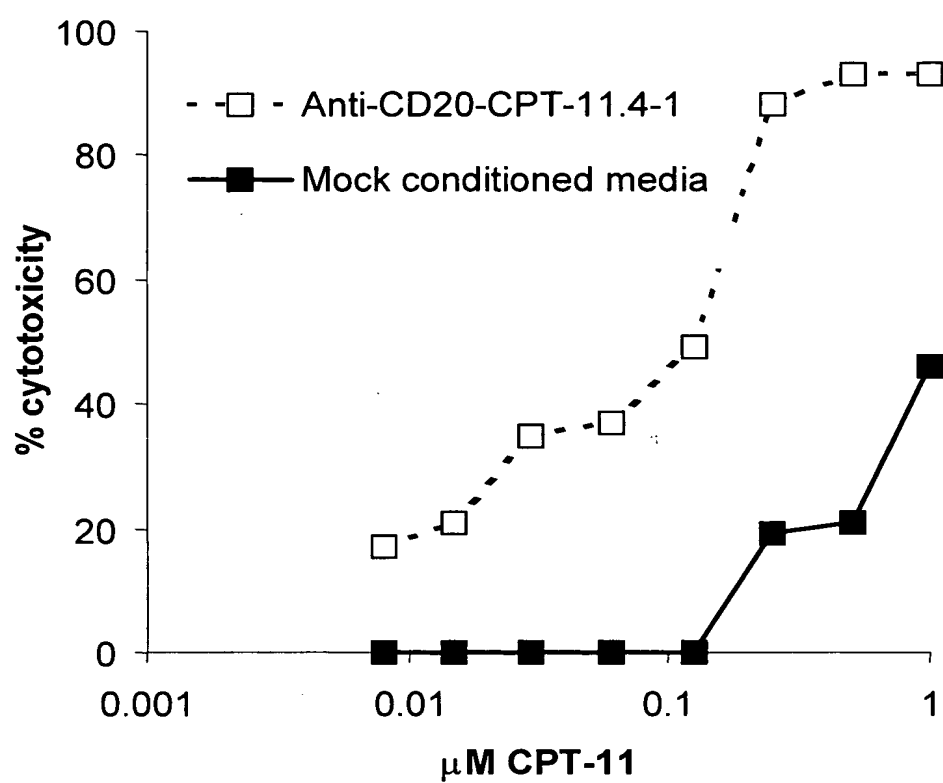
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Figure 14



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Figure 15



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**Figure 16**

<u>SEQ ID.NO</u>	<u>Residue #</u>	<u>wt</u>	<u>Mutation</u>	<u>Fold</u> <u>Increase</u>	<u>Assay</u>	<u>CODON</u> <u>CHANGE</u>
2	227	F	A	4	HPLC	1 TTT to GCT
		F	A	2	ONP	
		F	A	2	SW48	

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Figure 17

**F227A TEMPLATE (ALL MUTATIONS ARE ON F227A BACKGROUND)**

<u>SEQ ID.NO</u>	<u>Residue #</u>	<u>wt</u>	<u>Mutation</u>	<u>Fold Increase</u>	<u>Assay</u>		<u>CODON CHANGE</u>
24	68	N	K	80	SW48	23	AAC to AAG
26	68	N	R	75	SW48	25	AAC to CGG
28	70	D	G	12	SW48	27	GAT to GGG
30	70	D	H	65	SW48	29	GAT to CAT
32	77	H	F	75	SW48	31	CAT to TTC
34	77	H	P	80	SW48	33	CAT to CCT
36	120	T	W	100	HPLC	35	ACT to TGG
		T	W	20	SW48		
38	120	T	Y	20	SW48	37	ACT to TAT
		T	Y	80	HPLC		
40	282	Y	G	3	SW48	39	TAT to GGT
42	282	Y	N	3	SW48	41	TAT to AAT
4	284	T	A	7	HPLC	3	ACT to GCG
44	284	T	N	2	ONP	43	ACT to AAC
46	284	T	P	3	ONP	45	ACT to CCT
48	284	T	R	3	ONP	47	ACT to CGT
50	284	T	S	2	ONP	49	ACT to TCT
52	284	T	Y	2	ONP	51	ACT to TAT
54	285	P	N	4	SW48	53	CCT to AAT
56	285	P	Q	2	ONP	55	CCT to CAG
58	286	L	A	3	SW48	57	TTG to GCG
60	286	L	G	4	HPLC	59	TTG to GGG
		L	G	3	SW48		
10	286	L	H	4	HPLC	9	TTG to CAT
		L	H	3	SW48		
62	286	L	K	3	ONP	61	TTG to AAG
64	286	L	M	3	ONP	63	TTG to ATG
66	286	L	N	3	SW48	65	TTG to AAT
6	286	L	Q	3	ONP	5	TTG to CAG
		L	Q	4	SW48		
68	286	L	R	2	ONP	67	TTG to CGT
8	286	L	S	6	HPLC	7	TTG TO TCG
		L	S	2	ONP		
		L	S	5	SW48		
12	286	L	W	4	HPLC	11	TTG to TGG
		L	W	2	ONP		
70	287	S	F	6	HPLC	69	TCA to TTT
72	287	S	H	3	ONP	71	TCA to CAT
14	287	S	P	3	ONP	13	TCA to CCG

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Figure 17 (continued)

<u>SEQ ID.NO</u>	<u>Residue #</u>	<u>wt</u>	<u>Mutation</u>	<u>Fold Increase</u>	<u>Assay</u>	<u>CODON CHANGE</u>
74	287	S	R	2	ONP	73 TCA to CGT
76	287	S	T	2	ONP	75 TCA to ACT
78	327	T	A	3	SW48	77 ACA to GCT
80	327	T	P	3	SW48	79 ACA to CCT
82	329	F	L	3	SW48	81 TTT to CTT
84	330	L	S	3	SW48	83 TTA to TCG
86	331	V	A	6	SW48	85 GTC to GCG
88	331	V	G	5	SW48	87 GTC to GGT
90	331	V	P	3	SW48	89 GTC to CCT
92	331	V	S	5	SW48	91 GTC to TCT
94	331	V	T	4	SW48	93 GTC to ACT
96	332	Y	A	5	HPLC	95 TAT to GCG
98	332	Y	G	8	SW48	97 TAT to GGG
100	332	Y	L	3	SW48	99 TAT to TTG
102	332	Y	S	20	HPLC	101 TAT to TCT
		Y	S	20	SW48	
104	332	Y	W	3	SW48	103 TAT to TGG
106	429	P	K	83	SW48	105 CCG to AAG
108	429	P	L	108	SW48	107 CCG to TTG
110	429	P	Q	130	SW48	109 CCG to CAG
112	429	P	R	138	SW48	111 CCG to AGG
114	429	P	S	6	SW48	113 CCG to TCG
116	429	P	T	53	SW48	115 CCG to ACG
118	429	P	V	85	SW48	117 CCG to GTT
120	430	W	M	53	SW48	119 TGG to ATG
122	430	W	Y	120	SW48	121 TGG to TAT
124	431	P	Q	113	SW48	123 CCA to CAG
126	433	W	G	58	SW48	125 TGG to GGG
128	434	M	F	83	SW48	127 ATG to TTT
130	434	M	G	45	SW48	129 ATG to GGG
132	434	M	K	58	SW48	131 ATG to AAG
134	434	M	L	100	SW48	132 ATG to CTG
136	434	M	N	50	SW48	135 ATG to AAT
138	434	M	S	45	SW48	137 ATG to TCG
140	434	M	W	63	SW48	139 ATG to TGG
142	435	G	C	55	SW48	141 GGA to TGT
144	437	M	G	6	SW48	143 ATG to GGG
146	437	M	I	12	SW48	145 ATG to ATT
148	439	G	T	9	SW48	147 GGC to ACG
150	440	Y	A	5	SW48	149 TAT to GCT
152	440	Y	E	6	SW48	151 TAT to GAG



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**Figure 17 (continued)**

<u>SEQ ID.NO</u>	<u>Residue #</u>	<u>wt</u>	<u>Mutation</u>	<u>Fold</u> <u>Increase</u>	<u>Assay</u>		<u>CODON</u> <u>CHANGE</u>
154	440	Y	F	9	SW48	153	TAT to TTT
156	440	Y	G	8	SW48	155	TAT to GGT
158	440	Y	H	9	SW48	157	TAT to CAT
160	440	Y	L	12	SW48	159	TAT to TTG
162	440	Y	M	13	SW48	160	TAT to ATG
164	440	Y	N	12	SW48	161	TAT to AAT
166	440	Y	Q	13	SW48	165	TAT to CAG
168	440	Y	R	12	SW48	167	TAT to AGG
170	440	Y	S	7	SW48	169	TAT to TCT
172	440	Y	T	9	SW48	171	TAT to ACT
174	441	E	T	4	SW48	173	GAA to ACT
176	442	I	L	6	SW48	175	ATT to CTG

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Figure 18

COMBINATORIALS

<u>Residue #</u>	<u>wt</u>	<u>Mutation</u>	<u>Fold Increase</u>	<u>Assay</u>	
178 68_77_227_285_331	N_H_F_P_V	K_F_A_N_A	2500	HPLC	177 N->K AAC to AAG H->F CAT to TTT F->A TTT to GCT P->N CCT to AAT V->A GTC to GCG
180 77_227_285_331	N_H_F_P_V	K_F_A_N_A	300	SW48	
	H_F_P_V	F_A_N_A	3000	HPLC	179 H->F CAT to TTT F->A TTT to GCT P->N CCT to AAT V->A GTC to GCG
182 77_227_285_331_434	H_F_P_V	F_A_N_A	350	SW48	
	H_F_P_V_M	F_A_N_A_L	800	HPLC	181 H->F CAT to TTT F->A TTT to GCT P->N CCT to AAT V->A GTC to GCG M->L ATG to CTG
184 77_227_285_331_429	H_F_P_V_M	F_A_N_A_L	350	SW48	
	H_F_P_V_P	F_A_N_A_R	1500	HPLC	183 H->F CAT to TTT F->A TTT to GCT P->N CCT to AAT V->A GTC to GCG P->R CCG to CGG
186 77_120_227_285_331	H_F_P_V_P	F_A_N_A_R	400	SW48	
	H_T_F_P_V	F_W_A_N_A	500	SW48	185 H->F CAT to TTT T->W ACT to TGG F->A TTT to GCT P->N CCT to AAT V->A GTC to GCG
188 77_227_285_331_440	H_F_P_V_Y	F_A_N_A_Q	2000	HPLC	187 H->F CAT to TTT F->A TTT to GCT P->N CCT to AAT V->A GTC to GCG Y->Q TAT to CAG
	H_F_P_V_Y	F_A_N_A_Q	400	SW48	

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Figure 18 (continued)

<u>Residue #</u>	<u>wt</u>	<u>Mutation</u>	<u>Fold Increase</u>	<u>Assay</u>
190 277_285_398	A_P_F	V_L_I	2	HPLC 189 A->V GCA to GTC P->L CCG to CTC F->I TTC to ATT
192 227_286_332	F_L_Y	A_G_S	600	HPLC 191 F->A TTT to GCT L->G TTG to GGG Y->S TAT to TCG
194 227_429_434	F_P_M	A_L_V	93	SW48 193 F->A TTT to GCT P->L CCG to CTC M->V ATG to GTT
196 227_285_331	F_P_V	A_N_A	500	HPLC 195 F->A TTT to GCT P->N CCT to AAT V->A GTC to GCG

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Figure 19

a-CD20 VH-CH1hingecysL530BcHE.4-1

E	V	Q	L	V	Q	S	G	A	E	V	K	K	P	G	E	S	
1	GAG	GTG	CAG	CTG	GTG	CAG	TCT	GGA	GCA	GAG	GTG	AAA	AAG	CCC	GGG	GAG	TCT
	L	K	I	S	C	K	G	S	G	R	T	F	T	S	Y	N	M
52	CTG	AAG	ATC	TCC	TGT	AAG	GGT	TCT	GGC	CGT	ACA	TTT	ACC	AGT	TAC	AAT	ATG
	H	W	V	R	Q	M	P	G	K	G	L	E	W	M	G	A	I
103	CAC	TGG	GTG	CGC	CAG	ATG	CCC	GGG	AAA	GGC	CTG	GAG	TGG	ATG	GGG	GCT	ATT
	Y	P	L	T	G	D	T	S	Y	N	Q	K	S	K	L	Q	V
154	TAT	CCC	TTG	ACG	GGT	GAT	ACT	TCC	TAC	AAT	CAG	AAG	TCG	AAA	CTC	CAG	GTC
	T	I	S	A	D	K	S	I	S	T	A	Y	L	Q	W	S	S
205	ACC	ATC	TCA	GCC	GAC	AAG	TCC	ATC	AGC	ACC	GCC	TAC	CTG	CAG	TGG	AGC	AGC
	L	K	A	S	D	T	A	M	Y	Y	C	A	R	S	T	Y	V
256	CTG	AAG	GCC	TCG	GAC	ACC	GCC	ATG	TAT	TAC	TGT	GCG	AGA	TCG	ACT	TAC	GTG
	G	G	D	W	Q	F	D	V	W	G	K	G	T	T	V	T	V
307	GGC	GGT	GAC	TGG	CAG	TTC	GAT	GTC	TGG	GGC	AAG	GGG	ACC	ACG	GTC	ACC	GTC
	S	S	A	S	T	K	G	P	S	V	F	P	L	A	P	S	S
358	TCC	TCA	GCC	TCC	ACC	AAG	GGC	CCA	TCG	GTC	TTC	CCC	CTG	GCA	CCC	TCC	TCC
	K	S	T	S	G	G	T	A	A	L	G	C	L	V	K	D	Y
409	AAG	AGC	ACC	TCT	GGG	GGC	ACA	GCG	GCC	CTG	GGC	TGC	CTG	GTC	AAG	GAC	TAC
	F	P	E	P	V	T	V	S	W	N	S	G	A	L	T	S	G
460	TTC	CCC	GAA	CCG	GTG	ACG	GTG	TCG	TGG	AAC	TCA	GGC	GCC	CTG	ACC	AGC	GGC
	V	H	T	F	P	A	V	L	Q	S	S	G	L	Y	S	L	S
511	GTG	CAC	ACC	TTC	CCG	GCT	GTC	CTA	CAG	TCC	TCA	GGA	CTC	TAC	TCC	CTC	AGC
	S	V	V	T	V	P	S	S	S	L	G	T	Q	T	Y	I	C
562	AGC	GTG	GTG	ACC	GTG	CCC	TCC	AGC	AGC	TTG	GGC	ACC	CAG	ACC	TAC	ATC	TGC
	N	V	N	H	K	P	S	N	T	K	V	D	K	K	A	E	P
613	AAC	GTG	AAT	CAC	AAG	CCC	AGC	AAC	ACC	AAG	GTG	GAC	AAG	AAA	GCA	GAG	CCC
	K	S	C	D	K	T	H	T	C	P	P	C	P	K	L	E	D
664	AAA	TCT	TGT	GAC	AAA	ACT	CAC	ACA	TGC	CCA	CCG	TGC	CCA	AAG	CTT	GAA	GAT
	D	I	I	I	A	T	K	N	G	K	V	R	G	M	N	L	T

715	GAC	ATC	ATA	ATT	GCA	ACA	AAG	AAT	GGA	AAA	GTC	AGA	GGG	ATG	AAC	TTG	ACA
	V	F	G	G	T	V	T	A	F	L	G	I	P	Y	A	Q	P
766	GTT	TTT	GGT	GGC	ACG	GTA	ACA	GCC	TTT	CTT	GGA	ATT	CCC	TAT	GCA	CAG	CCA
	P	L	G	R	L	R	F	K	K	P	Q	S	L	T	K	W	S
817	CCT	CTT	GGT	AGA	CTT	CGA	TTC	AAA	AAG	CCA	CAG	TCT	CTG	ACC	AAG	TGG	TCT
	D	I	W	N	A	T	K	Y	A	N	S	C	C	Q	N	I	D
868	GAT	ATT	TGG	AAT	GCC	ACA	AAA	TAT	GCA	AAT	TCT	TGC	TGT	CAG	AAC	ATA	GAT
	Q	S	F	P	G	F	F	G	S	E	M	W	N	P	N	T	D
919	CAA	AGT	TTT	CCA	GGC	TTC	TTT	GGA	TCA	GAG	ATG	TGG	AAC	CCA	AAC	ACT	GAC
	L	S	E	D	C	L	Y	L	N	V	W	I	P	A	P	K	P
970	CTC	AGT	GAA	GAC	TGT	TTA	TAT	CTA	AAT	GTA	TGG	ATT	CCA	GCA	CCT	AAA	CCA
	K	N	A	T	V	L	I	W	I	Y	G	G	G	F	Q	T	G
1021	AAA	AAT	GCC	ACT	GTA	TTG	ATA	TGG	ATT	TAT	GGT	GGT	GGT	TTT	CAA	ACT	GGA
	T	S	S	L	H	V	Y	D	G	K	F	L	A	R	V	E	R
11072	ACA	TCA	TCT	TTA	CAT	GTT	TAT	GAT	GGC	AAG	TTT	CTG	GCT	CGG	GTT	GAA	AGA
	V	I	V	V	S	M	N	Y	R	V	G	A	L	G	F	L	A
11123	GTT	ATT	GTA	GTG	TCA	ATG	AAC	TAT	AGG	GTG	GGT	GCC	CTA	GGA	TTT	TTA	GCT
	L	P	G	N	P	E	A	P	G	N	M	G	L	F	D	Q	Q
11174	TTG	CCA	GGA	AAT	CCT	GAG	GCT	CCA	GGG	AAC	ATG	GGT	TTA	TTT	GAT	CAA	CAG
	L	A	L	Q	W	V	Q	K	N	I	A	A	F	G	G	N	P
11225	TTG	GCT	CTT	CAG	TGG	GTT	CAA	AAA	AAT	ATA	GCA	GCC	TTT	GGT	GGA	AAT	CCT
	K	S	V	T	L	F	G	E	S	A	G	A	A	S	V	S	L
11276	AAA	AGT	GTA	ACT	CTC	TTT	GGA	GAA	AGT	GCA	GGA	GCA	GCT	TCA	GTT	AGC	CTG
	H	L	L	S	P	G	S	H	S	L	F	T	R	A	I	L	Q
11327	CAT	TTG	CTT	TCT	CCT	GGA	AGC	CAT	TCA	TTG	TTT	ACC	AGA	GCC	ATT	CTG	CAA
	S	G	S	A	N	A	P	W	A	V	T	S	L	Y	E	A	R
11378	AGT	GGT	TCC	GCT	AAT	GCT	CCT	TGG	GCG	GTA	ACA	TCT	CTT	TAT	GAA	GCT	AGG
	N	R	T	L	N	L	A	K	L	T	G	C	S	R	E	N	E
11429	AAC	AGA	ACG	TTG	AAC	TTA	GCT	AAA	TTG	ACT	GGT	TGC	TCT	AGA	GAG	AAT	GAG
	T	E	I	I	K	C	L	R	N	K	D	P	Q	E	I	L	L
11480	ACT	GAA	ATA	ATC	AAG	TGT	CTT	AGA	AAT	AAA	GAT	CCC	CAA	GAA	ATT	CTT	CTG
	N	E	A	F	V	V	P	Y	G	T	N	L	S	V	N	F	G

1531	AAT	GAA	GCA	TTT	GTT	GTC	CCC	TAT	GGG	ACT	AAT	TTG	TCA	GTA	AAC	TTT	GGT
	P	T	V	D	G	D	F	L	T	D	M	P	D	I	L	L	E
1582	CCG	ACC	GTG	GAT	GGT	GAT	TTT	CTC	ACT	GAC	ATG	CCA	GAC	ATA	TTA	CTT	GAA
	L	G	Q	F	K	K	T	Q	I	L	V	G	V	N	K	D	E
1633	CTT	GGA	CAA	TTT	AAA	AAA	ACC	CAG	ATT	TTG	GTG	GGT	GTT	AAT	AAA	GAT	GAA
	G	T	A	F	L	A	Y	G	A	P	G	F	S	K	D	N	N
1684	GGG	ACA	GCT	TTT	TTA	GCG	TAT	GGT	GCT	CCT	GGC	TTC	AGC	AAA	GAT	AAC	AAT
	S	I	I	T	R	K	E	F	Q	E	G	L	K	I	F	F	P
1735	AGT	ATC	ATA	ACT	AGA	AAA	GAA	TTT	CAG	GAA	GGT	TTA	AAA	ATA	TTT	TTT	CCA
	G	V	S	E	F	G	K	E	S	I	L	F	H	Y	T	D	W
1786	GGA	GTG	AGT	GAG	TTT	GGA	AAG	GAA	TCC	ATC	CTT	TTT	CAT	TAC	ACA	GAC	TGG
	V	D	D	Q	R	P	E	N	Y	R	E	A	L	G	D	V	V
1837	GTA	GAT	GAT	CAG	AGA	CCT	GAA	AAC	TAC	CGT	GAG	GCC	TTG	GGT	GAT	GTT	GTT
	G	D	Y	N	F	I	C	P	A	L	E	F	T	K	K	F	S
1888	GGG	GAT	TAT	AAT	TTC	ATA	TGC	CCT	GCC	TTG	GAG	TTC	ACC	AAG	AAG	TTC	TCA
	E	W	G	N	N	A	F	F	Y	Y	F	E	H	R	S	S	K
1939	GAA	TGG	GGA	AAT	AAT	GCC	TTT	TTC	TAC	TAT	TTT	GAA	CAC	CGA	TCC	TCC	AAA
	L	P	W	P	E	W	M	G	V	M	H	G	Y	E	I	E	F
1990	CTT	CCG	TGG	CCA	GAA	TGG	ATG	GGA	GTG	ATG	CAT	GGC	TAT	GAA	ATT	GAA	TTT
	V	F	G	L	P	L	E	R	R	D	N	Y	T	K	A	E	E
2041	GTC	TTT	GGT	TTA	CCT	CTG	GAA	AGA	AGA	GAT	AAT	TAC	ACA	AAA	GCC	GAG	GAA
	I	L	S	R	S	I	V	K	R	W	A	N	F	A	K	Y	G
2092	ATT	TTG	AGT	AGA	TCC	ATA	GTG	AAA	CGG	TGG	GCA	AAT	TTT	GCA	AAA	TAT	GGG
	N	P	N	E	T	Q	N	N	S	T	S	W	P	V	F	K	S
2143	AAT	CCA	AAT	GAG	ACT	CAG	AAC	AAT	AGC	ACA	AGC	TGG	CCT	GTC	TTC	AAA	AGC
	T	E	Q	K	Y	L	T	L	N	T	E	S	T	R	I	M	T
2194	ACT	GAA	CAA	AAA	TAT	CTA	ACC	TTG	AAT	ACA	GAG	TCA	ACA	AGA	ATA	ATG	ACG
	K	L	R	A	Q	Q	C	R	F	W	T	S	F	F	P	K	V
2245	AAA	CTA	CGT	GCT	CAA	CAA	TGT	CGA	TTC	TGG	ACA	TCA	TTT	TTT	CCA	AAA	GTC

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Figure 20

a-CD20 VL construct

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E   I   V   L   T   Q   S   P   G   T   L   S   L   S   L   S   P   G   E
1  GAA ATT GTG TTG ACG CAG TCT CCA GGC ACC CTG TCT TTG TCT CCA GGG GAA
   R   A   T   L   S   C   R   A   S   S   S   V   P   Y   I   H   W
52 AGA GCC ACC CTC TCC TGC AGG GGC CAG GCT CCC AGG TCA AGT GTA CCG TAC ATC CAC TGG
   Y   Q   Q   K   P   G   Q   A   P   R   L   L   I   Y   A   T   S
103 TAC CAG CAG AAA CCT GGC CAG GCT CCC AGG CTC CTC ATC TAT GCC ACA TCC
   A   L   A   S   G   I   P   D   R   F   S   G   S   G   S   G   T
154 GCT CTG GCT TCT GGC ATC CCA GAC AGG TTC AGT GGC AGT GGC TCT GGG ACA
   D   F   T   L   T   I   S   R   L   E   P   E   D   F   A   V   Y
205 GAC TTC ACT CTC ACC ATC AGC AGA CTG GAG CCT GAA GAT TTT GCA GTG TAT
   Y   C   Q   Q   W   L   S   N   P   P   T   F   G   Q   G   T   K
256 TAC TGT CAG CAG TGG CTG AGT AAC CCA CCC ACT TTT GGC CAG GGG ACC AAG
   L   E   I   K   R   T   V   A   A   P   S   V   F   I   F   P   P
307 CTG GAG ATC AAA CGA ACT GTG GCT GCA CCA TCT GTC TTC ATC TTC CCG CCA
   S   D   E   Q   L   K   S   G   T   A   S   V   V   C   L   L   N
358 TCT GAT GAG CAG TTG AAA TCT GGA ACT GCC TCT GTT GTG TGC CTG CTG AAT
   N   F   Y   P   R   E   A   K   V   Q   W   K   V   D   N   A   L
409 AAC TTC TAT CCC AGA GAG GCC AAA GTA CAG TGG AAG GTG GAT AAC GCC CTC
   Q   S   G   N   S   Q   E   S   V   T   E   Q   D   S   K   D   S
460 CAA TCG GGT AAC TCC CAG GAG AGT GTC ACA GAG CAG GAC AGC AAG GAC AGC
   T   Y   S   L   S   S   T   L   T   L   S   K   A   D   Y   E   K
511 ACC TAC AGC CTC AGC AGC ACC CTG ACG CTG AGC AAA GCA GAC TAC GAG AAA
   H   K   V   Y   A   C   E   V   T   H   Q   G   L   S   S   P   V
562 CAC AAA GTC TAC GCC TGC GAA GTC ACC CAT CAG GGC CTG AGC TCG CCC GTC
   T   K   S   S   F   N   R   G   E   C   *
613 ACA AAG AGC TTC AAC AGG GGA GAG TGT TAG

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